

CLAIMS

We claim:

1. A method for treating the atmosphere to reduce the level of at least one gaseous pollutant contained therein, the method comprising passing ambient air into operative contact with a pollutant treating surface having a pollutant treating material thereon, wherein the pollutant treating surface is disposed on a stationary substrate.

10 2. The method of claim 1 wherein the pollutant treating material comprises at least one composition selected from the group consisting of one or more catalyst compositions and one or more adsorption compositions.

15 3. The method of claim 2 wherein the pollutant treating material comprises one or more catalytic compositions for promoting one or more chemical reactions selected from the group consisting of the conversion of ozone to oxygen, the reaction of carbon monoxide with oxygen to form carbon dioxide, and the decomposition of hydrocarbons.

20 4. The method of claim 3 wherein the pollutant treating material comprises a catalytic composition for promoting the conversion of ozone to oxygen, wherein said catalytic composition comprises a catalytically active material selected from the group consisting of manganese components, copper components, alumina components, precious metal components, activated carbon components, and combinations thereof.

25 30 5. The method of claim 3 wherein the pollutant treating material comprises a catalytic composition for promoting the reaction of carbon monoxide with oxygen

to form carbon dioxide, wherein said catalytic composition comprises a catalytically active precious metal component.

5       6. The method of claim 3 wherein the pollutant treating material comprises a catalytic composition for promoting the decomposition of hydrocarbons, wherein said catalytic composition comprises a catalytically active precious metal component.

10      7. The method of claim 1 wherein the step of passing the air in operative contact with the pollutant treating surface comprises actively drawing or forcing ambient air into operative contact with the surface.

15      8. The method of claim 7 wherein ambient air is actively drawn or forced by means of an air handling system, and the pollutant treating surface is disposed on an air contacting component of said air handling system.

20      9. The method of claim 8 wherein the air handling system comprises a fan which has fan blades and the pollutant treating surface is disposed on the fan blades.

25      10. The method of claim 8 wherein the air handling system comprises one or more air contact surfaces selected from the group consisting of filters, screens and grills, and the pollutant treating surface is disposed on one or more of said air contact surfaces.

30      11. The method of claim 8 wherein the air handling system comprises one or more removable air contact surfaces, and the pollutant treating surface is

disposed on one or more of said removable air contact surfaces.

5       12. The method of claim 8 wherein the air handling system comprises heat transfer surfaces and the pollutant treating surface is disposed on the heat transfer surfaces or downstream from the heat transfer surfaces.

10      13. The method of claim 12 wherein the air handling system further comprises one or more removable air contact surfaces located downstream from the heat transfer surfaces, and the pollutant treating surface is disposed on one or more of said removable air contact surfaces.

15      14. The method of claim 12 wherein said heat transfer surfaces are at a temperature above 25°C during at least a period of normal operation of said air handling system.

20      15. The method of claim 8 wherein the pollutant treating surface is one which is at a temperature above 25°C during at least a period of normal operation of said air handling system.

25      16. The method of claim 1 wherein the pollutant treating surface is one which normally attains a temperature above 25°C for at least a measurable period of time.

17. The method of claim 14, 15 or 16 wherein the pollutant treating material is one which is more effective at a temperature above 25°C.

18. The method of claim 1 wherein the pollutant treating material is contained in paint which has been applied to the pollutant treating surface.

5       19. The method of claim 1 wherein the air is passed in operative contact with the pollutant treating surface by natural air flow.

20. The method of claim 16 wherein said pollutant treating surface comprises an ambient air contacting surface on the exterior of a structure.

10      21. The method of claim 1 further comprising increasing the temperature of the ambient air before passing the ambient air over the ambient air contacting surface.

15      22. The method of claim 1 further comprising increasing the temperature of the air contacting surface before passing the ambient air over the ambient air contacting surface.

20      23. The method of claim 1 further comprising periodically rejuvenating the pollutant treating surface.

24. The method of claim 23 wherein said rejuvenating comprises cleaning the pollutant treating surface.

25      25. The method of claim 23 wherein said rejuvenating comprises adding fresh pollutant treating material to the pollutant treating surface.

26. The method of claim 25 further comprising removing at least some of the existing pollutant

treating material from the pollutant treating surface prior to adding fresh material.

5        27. The method of claim 1 in which the ambient air also contains non-gaseous contaminants, the method further comprising filtering the ambient air to remove at least some of the non-gaseous contaminants prior to passing the air into contact with the pollutant treating surface.

10      28. Apparatus for treating the atmosphere to reduce the level of at least one gaseous pollutant contained therein, the apparatus comprising:

- (a) a stationary substrate having at least one air contacting surface;
- (b) a pollutant treating material disposed on said air contacting surface; and
- (c) air passing means for passing ambient air into operative contact with the pollutant treating material.

20      29. The apparatus of claim 28 wherein the air passing means comprises a device for actively drawing or forcing ambient air into operative contact with the pollutant treating material.

25      30. The apparatus of claim 29 wherein the apparatus comprises an air handling system, and the pollutant treating material is disposed on an air contacting surface of a component of said air handling system.

30      31. The apparatus of claim 30 wherein the air handling system comprises a fan which has fan blades and the pollutant treating material is disposed on the fan blades.

32. The apparatus of claim 30 wherein the air handling system comprises one or more components selected from the group consisting of filters, screens and grills, and the pollutant treating material is disposed on one or more air contacting surfaces of said components.

33. The apparatus of claim 30 wherein the air handling system comprises one or more removable components which have air contacting surfaces, and the pollutant treating material is disposed on one or more of the air contacting surfaces of said removable components.

34. The apparatus of claim 30 wherein the air handling system comprises a heat exchanger having a heat transfer surface and the pollutant treating material is disposed on the heat transfer surface or on an air contacting surface of a component downstream from the heat transfer surface.

35. The apparatus of claim 34 wherein the air handling system further comprises one or more removable components located downstream from the heat transfer surface, and the pollutant treating material is disposed on one or more air contacting surfaces of said removable components.

36. The apparatus of claim 34 wherein said heat transfer surface is one which is at a temperature above 25°C during at least a period of normal operation of said air handling system.

37. The apparatus of claim 30 wherein the air contacting surface is one which is at a temperature above 25°C during at least a period of normal operation of said air handling system.

38. The apparatus of claim 28 wherein the air contacting surface is one which normally attains a temperature above 25°C for at least a measurable period of time.

5 39. The apparatus of claim 36, 37 or 38 wherein the pollutant treating material is one which is more effective at a temperature above 25°C.

10 40. The apparatus of claim 28 further comprising paint which has been applied to the air contacting surface, and wherein the pollutant treating material is contained in the paint.

41. The apparatus of claim 28 wherein the air passing means is natural air flow.

15 42. The apparatus of claim 41 comprising a structure with the pollutant treating material disposed on an air contacting exterior surface of the structure.

20 43. The apparatus of claim 28 further comprising means for increasing the temperature of the ambient air before passing the ambient air into operative contact with the pollutant treating material.

44. The apparatus of claim 28 further comprising means for increasing the temperature of the pollutant treating material before passing the ambient air into operative contact therewith.

25 45. The apparatus of claim 28 further comprising means for filtering the ambient air to remove at least some non-gaseous contaminants prior to passing the air into contact with the pollutant treating material.

46. A device for treating the atmosphere to reduce the level of at least one gaseous pollutant contained therein, wherein said device is capable of being operatively mounted onto a stationary air handling system which draws or forces a stream of ambient air therethrough, the device comprising:

- 5 (a) support means comprising at least one air contacting surface;
- 10 (b) a pollutant treating material disposed on said air contacting surface; and
- (c) mounting means for mounting said device onto said air handling system such that the pollutant treating material is in operative contact with the stream of ambient air.

15 47. The device of claim 46 wherein the mounting means includes a frame which is affixed to said air handling system and which is capable of holding the support means such that the pollutant treating material is in operative contact with the stream of ambient air.

20 48. The device of claim 47 wherein the support means is removable from the frame.